ECAL FLIGHT MODEL CONSTRUCTION
Selection of parts and control of quality

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Date : Dec. 16, 2007

In the construction of the ECAL flight model, our goal was that all the parts used in this detector reach the best possible quality and performances. For this sake, most of the parts have been produced in a quantity larger by 10 percent or more than necessary, in order to select among those the best ones.

For the pancake, 12 supermodules have been built, measured, and tested. Among these, 9 have been selected for being assembled together and glued to form the so-called pancake.

For the Light Collection system, comprising light guides, polycarbonate enclosure, magnetic shielding, PM and front end electronics, optical seals and thermal seals, each piece has been measured, checked, and a sample selected, larger than necessary. All the electronics boards have followed a complete set of test on an electronic test bench to record their detailed characteristics and to maximize the uniformity of the sample. Each set of 3 boards assembled together to form one FE electronics unit has also been submitted to a complete set of electronic test with a PM and caracterized also during thermal vacuum test. Though there is only 324 Light collection units, 380 PMT's have been bought and the same number of parts have been produced, in order to have at the end of the process 340 units fulfilling all requirements and SQ tests.

The EIB boards have been produced in Taiwan (with again 10% spares), and each board has been fully tested for electronic behaviour and space qualification (vibration, screening, Thermal vacuum).

When the assembly of ECAL was finished, it has been put in a test beam at CERN, with electron and protons from 6 GeV to 250 GeV in order to check the behaviour of the ECAL and the performances reached. The conclusions of this test are that the ECAL has no flaw observed, and the performances reach the design goal.